CLAIMS

1. A method for the manufacture of heat exchangers and apparatuses having brazed parts, comprising the steps of:

(a) juxtaposing at least two parts to define one or more joints therebetween;

(b) supplying to said one or more joints an iron/chromium brazing filler metal;

(c) heating said juxtaposed parts and said brazing filler metal under appropriate conditions in order to melt said brazing filler metal; and

(d) cooling said juxtaposed parts and said brazing filler metal to produce a solid brazed joint of a brazed assembly.

2. A method as recited by claim 1, further comprising the step of:

(e) conditioning said brazed parts by exposure to an elevated temperature in an oxygen-containing atmosphere for a time sufficient to substantially reduce the amount of nickel leaching into water or other fluids contacting the brazed joint of said brazed assembly.

3. A method as recited by claim 2, wherein said oxygen-containing atmosphere is air.

4. A method as recited by claim 2, wherein said elevated temperature ranges from about 300°C to 600°C.

5. A method as recited by claim 4, wherein said elevated temperature ranges from about 350°C to 500°C.

6. A method as recited by claim 2, wherein said time ranges from about 8 to 24 hours.

7. A method as recited by claim 1, wherein said iron/chromium brazing filler metal consists essentially of a composition having the formula $Fe_aCr_bCo_cNi_dMo_eW_fB_gSi_h$ wherein the subscripts "a", "b", "c", "d", "e", "f", "g", and "h" are in atom percent and wherein, "b" ranges from about 5 to 20, "c" ranges from 0 to about 30, "d" ranges from 0 to about 20, "e" ranges from 0 to about 5, "f" ranges from 0 to about 5, "g" ranges from about 8 to 15, "h" ranges from about 8 to 15, and the sum "a"+"b"+"c"+"d"+"e"+"f"+"g"+"h"=100, the balance being incidental impurities present in an amount up to about 1 percent by weight of the total composition.

8. A process for joining two or more metal parts to form a brazed joint in a brazed assembly, comprising the steps of:

(a) juxtaposing said parts to define one or more joints therebetween;

(b) supplying to the one or more joints an iron/chromium brazing filler metal;

(c) heating said juxtaposed parts and said brazing filler metal to melt said brazing filler metal; and

(d) cooling said juxtaposed parts and said melted brazing filler metal to produce a brazed joint having brazed parts.

9. A method as recited by claim 8, further comprising the step of:

(e) conditioning the brazed parts by exposing said brazed joint to an elevated temperature, in an oxygen-containing atmosphere, for a sufficient time to substantially reduce the amount of nickel leaching into water or other fluids contacting the brazed joint in said brazed assembly.

10. A method as recited by claim 9, wherein the oxygen-containing atmosphere is air.

11. A method as recited by claim 9, wherein said elevated temperature ranges from about 300°C to 600°C.

12. A method as recited by claim 11, wherein said elevated temperature ranges from about 350°C to 500°C.

13. A method as recited by claim 9, wherein said time ranges from about 8 to 24 hours.

14. A method as recited by claim 8, wherein said iron/chromium brazing filler metal consists essentially of a composition having the formula $Fe_aCr_bCo_cNi_dMo_eW_fB_gSi_h$ wherein the subscripts "a", "b", "c", "d", "e", "f", "g", and "h" are in atom percent and wherein, "b" ranges from about 5 to 20, "c" ranges from 0 to about 30, "d" ranges from 0 to about 20, "e" ranges from 0 to about 5, "f" ranges from 0 to about 5, "g" ranges from about 8 to 15, "h" ranges from about 8 to 15, and the sum "a"+"b"+"c"+"d"+"e"+"f"+"g"+"h"=100, the balance being incidental impurities present in an amount up to about 1 percent by weight of the total composition.

15. A heat exchanger, comprising at least one joint brazed with an iron/chromium brazing filler metal.

16. A heat exchanger as recited by claim 15, wherein said iron/chromium brazing filler metal consists essentially of a composition having the formula $Fe_aCr_bCo_cNi_dMo_eW_fB_gSi_h$ wherein the subscripts "a", "b", "c", "d", "e", "f",

"g", and "h" are in atom percent and wherein, "b" ranges from about 5 to 20, "c" ranges from 0 to about 30, "d" ranges from 0 to about 20, "e" ranges from 0 to about 5, "f" ranges from 0 to about 5, "g ranges from about 8 to 15, "h" ranges from about 8 to 15, and the sum "a"+"b"+"c"+"d"+"e"+"f"+"g"+"h"=100, the balance being incidental impurities present in an amount up to about 1 percent by weight of the total composition.

17. A heat exchanger comprising at least two parts forming one of a plurality of brazed joints in a brazed assembly, said heat exchanger being produced by a process comprising the steps of:

(a) juxtaposing said at least two parts to define one or more joints therebetween;

(b) supplying to said one or more joints an iron/chromium brazing filler metal;

(c) heating said juxtaposed parts and said brazing filler metal to melt the brazing filler metal; and

(d) cooling said juxtaposed parts and said melted brazing filler metal to produce a brazed joint having brazed parts.

18. A heat exchanger as recited by claim 17, said process further comprising the step of:

(e) conditioning the brazed parts by exposing said brazed joint to an elevated temperature, in an oxygen-containing atmosphere, for a

sufficient time to substantially reduce the amount of nickel leaching into water or other fluids contacting the brazed joints of the brazed assembly.

19. A heat exchanger as recited by claim 17, wherein said iron/chromium brazing filler metal consists essentially of a composition having the formula $Fe_aCr_bCo_cNi_dMo_eW_fB_gSi_h$ wherein the subscripts "a", "b", "c", "d", "e", "f", "g", and "h" are in atom percent and wherein, "b" ranges from about 5 to 20, "c" ranges from 0 to about 30, "d" ranges from 0 to about 20, "e" ranges from 0 to about 5, "f" ranges from 0 to about 5, "g ranges from about 8 to 15, "h" ranges from about 8 to 15, and the sum "a"+"b"+"c"+"d"+"e"+"f"+"g"+"h"=100, the balance being incidental impurities present in an amount up to about 1 percent by weight of the total composition.

20. A brazing filler metal consisting essentially of a composition having the formula $Fe_aCr_bCo_cNi_dMo_eW_fB_gSi_h$ wherein the subscripts "a", "b", "c", "d", "e", "f", "g", and "h" are in atom percent and wherein, "b" ranges from about 5 to 20, "c" ranges from 0 to about 30, "d" ranges from 0 to about 20, "e" ranges from 0 to about 5, "f" ranges from 0 to about 5, "g" ranges from about 8 to 15, "h" ranges from about 8 to 15, and the sum "a"+"b"+"c"+"d"+"e"+"f"+"g"+"h"=100, the balance being incidental impurities present in an amount up to about 1 percent by weight of the total composition.

21. A brazing filler metal as recited by claim 20, wherein "b" ranges from about 5 to 10, "c" ranges from 0 to about 10, "d" ranges from 0 to about 10, "e" ranges from 0 to about 3, "f" ranges from 0 to about 3, and the sum "g" + "h" ranges from about 18 to 25.

22. A brazing filler metal as recited by claim 20, said metal being in the form of a homogeneous, ductile ribbon.